

Genetic technology

(Continued from Page D31)

With Syncro-Mate-B treatment, estrus is predictable within a narrow span of hours. Artificial insemination can be scheduled or "timed" without heat detection.

According to CEVA spokesmen, the close synchronization of Syncro-Mate-B, and "timed" insemination without heat detection, will enable many more beef and dairy producers to take advantage of A.I. Statistics show that currently only about 5 percent of the beef cattle industry uses A.I. despite its recognized benefits. In addition to being a boost to A.I., Syncro-Mate-B is seen as playing a role in the expanding use of embryo transfer at the producer level.

Freezing of Embryos

Partly because of the synchronization stumbling block, attention in embryo transfer research centered on a workable means to preserve embryos. A method of preservation is desirable for two reasons. It permits considerable elapsed time between embryo collection and the

transplanting procedure. And it makes possible transfer of embryos over long distances, even into export markets.

As a method of embryo preservation, it was natural to look to a freezing procedure similar to the freezing of bull semen. If A.I. bull "studs," why not "cow studs?" The freezing procedure was not satisfactory at first, partly because intra-cellular water formed crystals and damaged the embryos. Later, a procedure for removing most of the intra-cellular water and the addition of cryoprotectants such as glycerol led to acceptable survival rates. This has opened the door to much wider use of the embryo transfer procedure.

Embryo "Splitting"

Along with embryo preservation, a practical method of splitting embryos was achieved during the past year. This technique has significant implications at both the research and producer level. Embryos are collected at about the 60-cell stage. Using a micro-

manipulator, embryos are divided in half. One half is left in the original "shell" and the other half is placed in a "shell" from which an unfertilized egg has been removed.

As Dr. Elsdén explains, embryo-splitting results in two genetically identical animals. From a research standpoint this is very valuable because in testing, the genetic factor is controlled. Also, Dr. Elsdén adds, with the freezing technique one-half of a split embryo can be preserved or "saved."

Citing the example of a bull, Dr. Elsdén points out that by the time a bull's descendants can be evaluated and judged superior the bull can already be 6 or 7 years old and possibly past his peak fertility. With embryo-splitting and preservation, an identical animal is in reverse, to be brought out later and used as a sire for many years if progeny from the first half-embryo indicates superior characteristics.

Choosing Characteristics

Beyond the embryo preservation and splitting technology there lies the field of recombinant DNA where selected genes can be transferred to produce tomorrow's

super animal. As envisioned, this super animal will be genetically-tailored to produce many more pounds of beef or milk from much less feed, drastically changing the beef and dairy industry.

Is such a thing possible? According to Dr. Elsdén, research is

leading in that direction but results are not "just around the corner." Research this goal will require continued painstaking research, time, and further technological advances.

But considering the strides of the past year, a lot can happen in a short period of time.

Canada, PRC sponsor research

TORONTO, Canada — In a forward-looking agreement, Canadian sponsoring agencies and the Peoples Republic of China (PRC) have initiated a five-year program of agronomic research and education.

"This represents an important opportunity to achieve more balanced fertilization practices in large areas of the PRC," notes K.M. Pretty, President of the Potash & Phosphate Institute of Canada (PPIC), an arm of the worldwide Potash & Phosphate Institute with headquarters in Atlanta, Georgia. The PPIC office in Toronto will serve as the Canadian agency for implementing and coordinating the program.

The sponsors include: the Government of Saskatchewan;

Canadian International Development Agency (CIDA); Saskatchewan potash producers; and PPIC.

The PRC now uses relatively large amounts of nitrogenous fertilizers. Attempts to further increase food production by more intensified cropping and improved management have accentuated potash deficiencies, especially in southern regions of the country.

Existing imbalances in fertilizer nutrient ratios must be corrected if further significant gains in crop yield are to be expected in potash-deficient areas. The current ratio of nutrients (nitrogen, phosphate: potash) used in China is approximately 1.0: 0.28: 0.04. Preliminary research indicates that the short term goals should be to change this ratio to 1.0: 0.5: 0.2.

Bluetongue in Florida

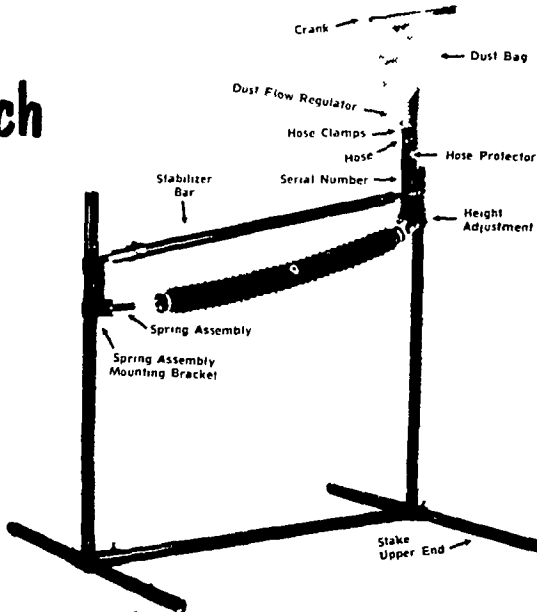
WASHINGTON, D.C. — A new serotype of bluetongue virus has been found in Ona, Fla., a U.S. Department of Agriculture veterinarian reports.

John K. Atwell, deputy administrator of USDA's Animal and Plant Health Inspection Service, said this serotype of the virus, new to the United States, was found in a herd of cattle owned by the University of Florida.

Bluetongue is a disease of cattle, sheep and goats that is spread by a biting midge of the *Culicoides* family, he said. Of 20 bluetongue serotypes identified worldwide, four previously have been found in the United States.

The surveillance studies are being conducted by the University of Florida as part of a cooperative effort of the university, the Florida Department of Agriculture and USDA.

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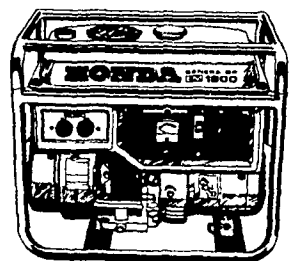
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